

Principles of Heat Treatment Training | Industrial Materials eLearning Course

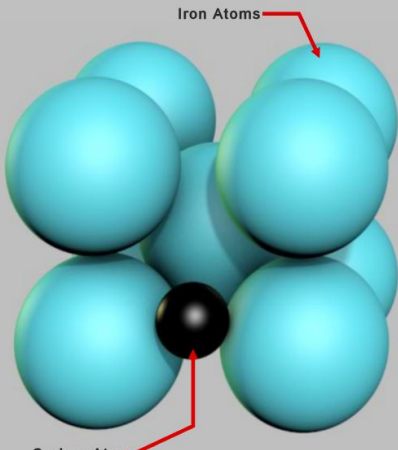
Principles of Heat Treatment - WXML203-XX01XEN-E1

Objective 1: Define Heat Treating and Explain Its Importance

Metal's Crystalline Structure

A metal's properties are determined by the shape and alignment of its atoms. These atoms are arranged in three-dimensional patterns called crystalline structures.

Heat treating works by altering the shape and alignment of a metal's crystalline structure.



Iron Atoms

Carbon Atom

AMATROL

Page 3 of 93

eLearning Course: MXML203

Amatrol's Principles of Heat Treatment eLearning course (MXML203) introduces the properties, processes, skills, and concepts working with heat treating methods commonly employed in manufacturing. These concepts include the different types of heat treating processes, chemical changes of ferrous and non-ferrous metal during heat treatment, batch and continuous production heat treating, heat treated metal testing, and heat treating nomenclature and standards. This course encompasses knowledge needed in today's world of manufacturing processes and materials.

Heat treatment is the process of modifying a metal's mechanical properties, such as strength, brittleness, machinability, and hardness. Heat treating changes metal properties by heating the metal to a specific temperature, holding it at that temperature for a certain length of time, and then using one of several methods to control the cooling of the metal.

In-Depth Heat Treatment Curriculum

What is Heat Treating?

Heat treatment is the process of modifying a metal's mechanical properties, such as strength, brittleness, machinability, and hardness. Heat treating changes metal properties by heating the metal to a specific temperature, holding it at that temperature for a certain length of time, and then using one of several methods to control the cooling of the metal. A metal's properties are determined by the shape and alignment of its atoms. These atoms are arranged in three-dimensional patterns called crystalline structures. Heat treating works by altering the shape and alignment of a metal's crystalline structure.

The changing of the metal's properties occurs when a metal is heated to a high temperature. The temperature, which remains below the material's melting point, excites the atoms of the metal allowing its crystal structure to change. Heat treating can be used to make a material harder or softer. An example of a product that requires heat treating to harden its material is a steel chisel. During heat treatment, the chisel is heated to a specific temperature range, which changes its crystal structure and increases its hardness.

Interactive eLearning with Learning Management System

Highly-Interactive Multimedia Format Appeals to All Learning Styles

Amatrol's heat treatment eLearning course features interactive eLearning curriculum that integrates various types of learning methods to create an engaging, effective learning experience. Amatrol's multimedia [eLearning](#) curriculum includes text with voiceovers, videos, 3D animations, pictures, and interactive activities, quizzes, and self-reviews.

Free Learning Management System (LMS)

Amatrol eLearning is easy-to-use for both students and instructors. Its web-based interface is simple to navigate and available on any WebGL-compatible Internet browser. Instructors love Amatrol eLearning for its simple, yet sophisticated Learning Management System (LMS). The LMS allows instructors to create custom courses, monitor student participation, track course progress, assess knowledge levels prior to a course, and test knowledge levels after completion. Learners appreciate the fact that they can start and stop as needed, moving through each Amatrol course at their own pace. If a self-review reveals that they didn't understand a particular topic as well as they thought they did, they can revisit it before moving on.

Additional Info

Requires:

- Computer (see [Computer Requirements](#))

Options:

- Amatrol SkillTrace Software (94-ST1)

Address

**Amatrol
2400 Centennial Blvd
Jeffersonville, IN 47130**

Contacts

**email: contact@amatrol.com
phone: (800) 264 8285**